

II. Woodland

II.B.2.N.B. TEMPORARILY FLOODED COLD-DECIDUOUS WOODLAND

II.B.2.N.b.12. POPULUS FREMONTII TEMPORARILY FLOODED WOODLAND ALLIANCE

Fremont Cottonwood Temporarily Flooded Woodland Alliance

ALLIANCE CONCEPT

Summary: These woodlands occur as small isolated stands or as linear bands that parallel stream channels. In the Southeast, this alliance has limited occurrence and may be extirpated in the Trans-Pecos of western Texas. It also occurs in New Mexico, Arizona, Utah, the Mexican states of Chihuahua and Coahuila, and possibly California. This alliance contains riparian woodlands dominated by *Populus fremontii*. Individuals of *Populus fremontii* are scattered or occur in groves, and may reach 30 m in height and 2 m in diameter. Other species that may occur in the canopy/subcanopy include *Populus deltoides* ssp. *wisizenii*, *Baccharis salicifolia*, *Salix lasiolepis*, *Salix exigua*, *Salix amygdaloides*, *Salix gooddingii*, *Fraxinus berlandieriana*, *Fraxinus velutina*, *Celtis laevigata* var. *reticulata*, *Juglans microcarpa*, *Prosopis pubescens*, *Prosopis glandulosa*, and *Prosopis velutina*. The understory of most examples has been considerably altered by grazing and other factors, thus the composition and cover of the native understory are difficult to ascertain but frequently consist of shrubs and small trees (1-5 m tall). The herbaceous stratum varies in composition and coverage but is characterized by mixed annuals and short-lived perennials.

ENVIRONMENTAL DESCRIPTION

USFWS WETLAND SYSTEM: PALUSTRINE

Ouray National Wildlife Refuge Environment: Mature *Populus fremontii* trees have persisted on a third terrace from the Green River, probably for more than a century, resulting in an open woodland formation. The soils are silty clay and have become well-vegetated with riparian grasses. The massive trunks of these trees exhibit fire scarring.

Global Environment (Alliance): Woodlands included in this riparian alliance are found in floodplains and on lower alluvial terraces along the perennial streams that occur in the southern deserts. Elevations range from 400-2500 m. Climate is arid to semi-arid with hot summers and typically mild winters, but with freezing temperatures not uncommon in northern stands. Mean annual precipitation ranges from 15-28 cm, but can vary greatly from year to year. Drought is not uncommon. Annual precipitation has bimodal distribution with the proportion of summer precipitation decreasing westward (Barbour and Major 1977). At the Jornada Experimental Range in southwestern New Mexico, about two-thirds of the annual precipitation occurs in July through October and a third during the winter months. At Tucson, Arizona about half of the annual rain falls in July to October with the balance during the winter months. In southern California the precipitation is mostly winter and the mean annual precipitation may be less than 15 cm in the deserts. The most arid season is late spring and early summer. The summer rain often occurs as high-intensity convective storms.

Stands are restricted to the floodplains and corridors of perennial streams by the arid upland environment. This vegetation type is dependent on a subsurface water supply and varies considerably with the water table levels. Major flood events and consequent flood scour, overbank deposition of water and sediments, and stream meandering are important factors that shape these woodlands. These woodlands occur as small isolated stands or as linear bands that parallel stream channels. Sites are flat to gently sloping and occur in lower canyons in desert mountains, alluvial fans and valleys. Substrates are generally well-drained, coarse-textured soils derived from stratified alluvium composed of sand, loam, gravel and cobbles. The soils may be slightly alkaline and saline.

Adjacent stands include other riparian and semi-riparian shrublands and woodlands, desert scrub, montane scrub and montane forests.

VEGETATION DESCRIPTION

Ouray National Wildlife Refuge Vegetation: This Fremont cottonwood stand is significant because of the size and age of the mature trees present; they measured 136 cm and 171 cm dbh and were over 40 m tall. Total stand foliar cover was about 70% and the mature Fremont cottonwoods contributed about 30% to that total for the plot. The subcanopy consisted of *Elaeagnus angustifolia*, from 5-10 m tall and contributing approximately 10% foliar cover. *Tamarix ramosissima* was the only tall shrub present at 2-5 m tall and contributing approximately 20% foliar cover. Less than 5% of the plot had herbaceous cover and this was primarily *Distichlis spicata*, *Hordeum jubatum*, *Iva axillaris*, and *Lepidium latifolium*.

Global Vegetation (Alliance): This alliance contains woodlands classified as temporarily flooded. The canopy is dominated by open stands of *Populus fremontii* generally forming 30-70% cover; individuals may be scattered or

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occur in groves. This species may reach 30 m in height and 2 m in diameter. Other woody species that may occur in the canopy/subcanopy include *Populus deltoides ssp. wislizeni*, *Baccharis salicifolia*, *Salix lasiolepis*, *Salix exigua*, *Salix amygdaloides*, *Salix gooddingii*, *Fraxinus berlandieriana*, *Fraxinus velutina*, *Celtis laevigata var. reticulata*, *Juglans microcarpa*, *Prosopis pubescens*, *Prosopis glandulosa*, or *Prosopis velutina*. The understories of most examples have been considerably altered by grazing and other factors, thus the composition and cover of the native understory is difficult to ascertain, but frequently consists of shrubs and small trees (1-5 m tall) of the above species. The herbaceous stratum varies in composition and coverage, but is characterized by mixed annuals and short-lived perennials.

Dynamics (Alliance): This alliance is dependent on a subsurface water supply and varies considerably with the water table levels. Major flood events and consequent flood scour, overbank deposition of water and sediments, and stream meandering are important factors that shape these woodlands.

MOST ABUNDANT SPECIES

Ouray National Wildlife Refuge

StratumSpecies

TREE CANOPY	<i>Populus fremontii</i>
TREE SUBCANOPY	<i>Elaeagnus angustifolia</i>
SHRUB TALL	<i>Tamarix ramosissima</i>
SHRUB SHORT	<i>Rhus trilobata</i> , <i>Elaeagnus angustifolia</i>
HERBACOUES	<i>Distichlis spicata</i> , <i>Hordeum jubatum</i> , <i>Iva axillaris</i> , <i>Lepidium latifolium</i>

Global

Stratum

Species

TREE CANOPY	<i>Populus fremontii</i>
TALL SHRUB	<i>Salix gooddingii</i>

CHARACTERISTIC SPECIES

Ouray National Wildlife Refuge

Species

Populus fremontii, *Elaeagnus angustifolia*, *Tamarix ramosissima*, *Distichlis spicata*, *Iva axillaris*

Global

Species

Populus fremontii

OTHER NOTEWORTHY SPECIES

Ouray National Wildlife Refuge

Stratum

Species

N/A

Global

Stratum

Species

TREE SUB-CANOPY	<i>Elaeagnus angustifolia</i>
TALL SHRUB	<i>Tamarix</i> spp.
GRAMINOID	<i>Cynodon dactylon</i>
FORB	<i>Melilotus officinalis</i>

GLOBAL SIMILAR ASSOCIATIONS: N/A

SYNONYMY: N/A

CLASSIFICATION COMMENTS

Ouray National Wildlife Refuge: N/A

Global Comments (Alliance): This vegetation is dependent on a subsurface water supply and varies considerably with the water table levels. Major flood events and consequent flood scour, overbank deposition of water and sediments, and stream meandering are important factors that shape these woodlands. Woodlands in this alliance once occupied the floodplains and riverbanks of most perennial waterways within the range of *Populus fremontii* but have mostly been replaced by disturbance types dominated by exotic species. The II.B.2.N.c *Populus fremontii* Seasonally Flooded Woodland Alliance (A.654) differs due to constancy of surface water and depth to water table.

This alliance is poorly studied; further inventory and classification work are needed for all *Populus fremontii* communities. This is hindered by the alteration of species structure and composition that has occurred in most remaining stands because of hydrologic alterations, exotic species invasions, grazing, and other human impacts.

ELEMENT DISTRIBUTION

Ouray National Wildlife Refuge Range: This description is from one mature stand in Johnson Bottom.

Global Range (Alliance): Riparian woodlands included in this alliance are reported from western Texas to southern California and in southwestern Utah. It is also found in the Mexican states of Chihuahua and Coahuila, and likely found in southern Nevada.

Nations: MX US

States/Provinces: AZ CA? MXCH? MXSO? NM TX UT

TNC Ecoregions: 10:C, 11:C, 18:C, 19:C, 20:C, 21:C, 22:C, 24:C

USFS Ecoregions: 313A:CC, 321A:CC, 322B:C?, M313A:CC, M313B:C?

Federal Lands: USFWS (Ouray)

ALLIANCE SOURCES

Identifier: A.644 **Confidence:** N/A **Conservation Rank:** N/A

REFERENCES: Allard 1990, Barrows et al. 1977, Boles and Dick-Peddie 1983, Brown 1982, Campbell and Dick-Peddie 1964, Diamond 1993, Diamond et al. 1992, Dick-Peddie 1993, Eyre 1980, Holland 1986b, Metcalfe 1902, Muldavin 1987, New Mexico Natural Heritage Program (NMNHP) n.d., Sawyer and Keeler-Wolf 1995, Stromberg 1993a, Stromberg 1995b, Szaro 1989, The Nature Conservancy (TNC) 1992, Von Loh 2000, Webb and Brotherson 1988.